Molecular recognition method by matching shape of cyclic voltammogram and its device

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Abstract

A mol. recognition method is characterized in that mols. are recognized based on a shape of cyclic voltammogram which is obtained by taking out current in the state of continuously impressing voltage increasing or decreasing at specified ratio against a soln. contg. mols. to be measured, preferably an electrolyte soln. Mols. are recognized by first obtaining a shape of cyclic voltammogram corresponding to each mol. and judging which shape of cyclic voltammogram matches the shape of cyclic voltammogram for the mol. to be measured. The concn. of a mol. is detected based on the area of upward-indentation part of cyclic voltammogram in this mol. recognition method. A mol. recognition device comprises (1) electrodes for taking out current in the state of impressing voltage against a soln. contg. mols. to be measured, (2) a means of voltage sweep for increasing and decreasing above voltage at specified ratio, (3) a means of visualization to obtain cyclic voltammogram based on current taken out and impressed voltage, (4) a means of recognizing mols. based on shapes of cyclic voltammogram, and (5) a means for detecting concn. of mols. based on the upwardindentation part of obtained cyclic voltammogram. This method and device do not require diln. treatment and various reagents, straightforwardly and reliably recognizes mols. and simultaneously detects concn. of a mol., and are suitable for recognizing stereoisomers of sugars represented by the same mol. formula. When sugar is a monosaccharide, the device promotes decompn. Cyclic voltammograms of monosaccharides represented by formula C61-11206 including D-glucose, D-mannose, D-galactose, D-talose, D-allose, and D-fructose were obtained.

Method for maintaining surface cleanness of noble metal catalyst and fuel cells using the method

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Abstract

For maintaining the surface cleanness of noble metals used as catalysts or electrode catalysts in solid/liq. interfacial reaction systems, monosaccharides are added in a soln. in contact with the noble metals and then oxidizing the monosaccha rides. In the fuel cells, the monosaccharides are used as anode fuel and O or air is supplied to the cathode side. Since the surface of the noble metals are protected with the oxidized monosaccharides, the catalyst has high activity for a long period.